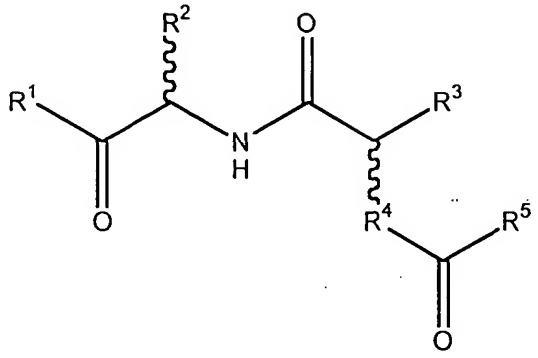
WHAT IS CLAIMED IS:

1. A chemical compound comprising an analog or a derivative of (S,S,R)-(-)-actinonin having the structure:



wherein R^1 is an optionally substituted or halogenated alkyl, aryl, heteroalkyl or heteroaryl amine, said R^1 further comprising a cyclic or bicyclic structure;

R^2 is methyl, CH_2CH_3, $(CH_2)_2CH_3$, $C(CH_3)_3$, phenyl, 3,4-dichlorophenyl, biphenyl, benzyl, 4-hydroxybenzyl, piperidine, N-Boc-4-piperidine, CH_2-(N-Boc-4-piperidine), 4-tetrahydropyran, CH_2-4-tetrahydropyran, 3-methyl indolyl, 2-naphthyl, 3-pyridyl, 4-pyridyl, 3-thienyl;

R^3 is R^2 or C_{3-8}alkyl,

R^4 is C_{1-3}alkyl; and

R^5 is NH_2, OH, NHOH, $NHOCH_3$, $N(CH_3)OH$, $N(CH_3)OCH_3$, $NHCH_2CH_3$, $NH(CH_2CH_3)$, $NHCH_2(2,4\text{-}(OCH3)_2Ph$, $NHCH_2(4\text{-}NO_2)Ph$, $NHN(CH_3)_2$, proline, or 2-hydroxymethyl pyrrolidine.

2. The chemical compound of claim 1 wherein:

R^1 is $NHCH_2Ph$, $NHCH_3$, $NHCH_2CH_3$, $N(CH_3)_2$, $N(CH_2CH_3)_2$, $NHCH_2(2,4\text{-}(OCH_3)_2Ph$, $NHCH_2(4\text{-}NO_2Ph)$, hexamethyleneamine, methyl 2- or 3-hexamethyleneamine carboxylate, heptamethyleneamine, pyrrole, indole, aziradine, imidazole, 1,4-dioxan-2-yl-methylamine, 3,4-dihydro-2H-1,4-benzoxazin-6-ol, 6-methoxy-1,2,3,4-tetrahydro-isoquinoline, piperazin-1-yl-pyridin-3-yl-methanone or further comprising:

proline optionally substituted to independently form a methyl, ethyl, benzyl or *t*-butyl ester;

azetidine optionally substituted with one of 2- or 3-methyl or ethyl or a methyl-, ethyl- or benzyl-2- or 3- carboxylate;

indoline optionally substituted with one of C2-C7 fluoro or methyl-2-carboxylate;

pyrrolidine optionally substituted with 2-methylamino, 2-hydroxycarbamoyl, one of 2- or 3-hydroxymethyl, one of 2- or 3-methyl, ethyl, benzyl or phenyl, one of 2,3-, 2,4-, or 2,5-dimethyl, 2,5-diethyl, one of methyl-, ethyl-, *t*-butyl- or benzyl-3- carboxylate, or methyl-(2-methyl-5- carboxylate);

piperidine optionally substituted with 2- or 3-methyl or ethyl, one of methyl-, ethyl-, or benzyl- 2-, 3-, 4- carboxylate;

morpholine optionally substituted with one of methyl-, ethyl-, or benzyl- 2- or 3- carboxylate; or

piperazine optionally substituted with 1-benzyl, *N*-*t*-boc, 1-furfuryl, 1-isonicotinoyl, or -one of pyridin-2-, 3- or 4-ylmethyl;

or pharmaceutically acceptable salts or hydrates thereof.

3. The chemical compound of claim 2, wherein said compound is *N*4-hydroxy-*N*1-(1-(2-methyl-pyrrolidine-1-carbonyl)-3-methyl-propyl)-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-3-methyl-butyl)-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-3-methyl-butyl)-2-pentyl succinamide, *N*1-(1-benzyl-2-(2-

hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl)-*N*4-hydroxy-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(4-hydroxy-benzyl)-2-(2-hydroxy methyl-pyrrolidin-1-yl)-2-oxo-ethyl)-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(2-(2-hydroxymethyl-pyrrolidin-1-yl)-1(1*H*-indol-3-yl-methyl)-2-oxo-ethyl)-2-pentyl-succinamide, *N*1-(5-amino-1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-pentyl)-*N*4-hydroxy-2-pentyl -succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-piperidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxycarbamoyl-pyrrolidine-1-carbonyl)-3-methyl-butyl)-2-pentyl succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-methyl-succinamide, *N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-3-methyl-butyl)-2-pentyl-succinamide, *N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl)-2-pentyl-succinamide, *N*1-(1-(2-methyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-benzyl-2-(2-methyl-pyrrolidin-1-yl)-2-oxo-ethyl -2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-methylamine-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide, 3-[1-(2-hydroxymethyl-pyrrolidin-1-yl)-2-benzylcarbamoyl]-octanoic acid (54), *N*4-hydroxy-*N*1-(1-(methyl-2-carboxy-pyrrolidine-1-carbonyl)-

2-methyl-propyl)-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-carboxy-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide, *N*4,*N*4-diethyl-*N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl-2-pentyl-succinamide, *N*4-ethyl-*N*1-(1-benzyl-2-(2-hydroxymethyl -pyrrolidin-1-yl)-2-oxo-ethyl -2-pentyl-succinamide, *N*4-(2,4-methoxybenzyl)-*N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl-2-pentyl-succinamide, 2-(N',N'-dimethyl-hydrazinocarbonylmethyl)-heptanoic acid [1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl]-amide, *N*4-(4-nitrobenzyl)-*N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl-2-pentyl-succinamide, 2-[2-(4-methyl-piperazin-1-yl)-2-oxo-ethyl]-heptanoic acid [1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl]-amide, *N*4-(methoxy)-*N*1-(1-benzyl-2-(2-hydroxy methyl-pyrrolidin-1-yl)-2-oxo-ethyl -2-pentyl-succinamide, *N*4-(piperidin-1-carbonyl)-*N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl -2-pentyl-succinamide, or *N*4, *N*4-methoxymethyl-*N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl-2-pentyl-succinamide.

4. A pharmaceutical composition, comprising the compound of claim 1 and a pharmaceutically acceptable carrier.

5. A method for asymmetrically synthesizing a chemical compound having the structure of claim 1, said structure further comprising (S,S,R)-(-)-actinonin, said method comprising the steps of:

a) forming an optionally *O*-protected R^1-1-carbonyl-C2-(R^2)-methyleneamine from R^1 and an *N*-protected R^2-amino acid 2,5-dioxo-pyrrolidinyl ester and deprotecting said *N*-protected R^2-amino acid with a suitable agent comprising trifluoroacetic acid;

b) forming an R^3-carbonyl-oxazolidone from 4-isopropyl-oxazolidin-2-one and R^3-carbonyl chloride;

c) treating a solution of 4-(*S*)-isopropyl-oxazolidin-2-one with a solution of a base comprising n-butyl lithium in hexanes and adding an R^3-carbonyl chloride thereby forming an R^3-carbonyl oxazolidinone;

d) treating a solution of the R^3-carbonyl oxazolidinone sequentially with a base comprising lithium diisopropylamide and

with a bromo-R^4 acid-*tert*-butyl ester thereby forming an oxazolidine-R^3-carbonyl-R^4-acid *tert*-butyl ester;

e) treating a mixture of the an oxazolidine-R^3-carbonyl-R^4-acid *tert*-butyl ester in tetrahydrofuran and water sequentially with hydrogen peroxide in water and with lithium hydroxide in water thereby forming a C2(R^3)-R^4-dicarboxylic acid *tert*-butyl ester;

f) treating a mixture of the C2(R^3)-R^4-dicarboxylic acid 4-*tert*-butyl ester and hydroxysuccinimide in a solvent comprising dioxane or dimethylformamide with an imide comprising dicyclohexylcarbodiimide thereby forming an C2(R^3)-R^4-dicarboxylic acid *tert*-butyl ester-(2,5-dioxo-pyrrolidin-1-yl) ester;

g) treating a solution of said optionally *O*-protected R^1-1-carbonyl-2-(R^2)-methyleneamine in a solvent comprising tetrahydrofuran sequentially with triethylamine and with the C2(R^3)-R^4-dicarboxylic acid *tert*-butyl ester-(2,5-dioxo-pyrrolidin-1-yl) ester thereby forming an optionally *O*-protected R^1-1-carbonyl-2-(R^2)-carbamoyl-methylene(R^3)-R^4-carboxylic acid *tert*-butyl ester;

h) treating a solution of said optionally *O*-protected R^1-1-carbonyl-C2(R^2)-carbamoyl-methylene(R^3)-R^4-carboxylic acid

tert-butyl ester in a solvent comprising methylene chloride with trifluoroacetic acid thereby forming an optionally *O*-protected R^1-1-carbonyl-C2(R^2)-carbamoyl-methylene(R^3)-R^4-carboxylic acid;

i) treating said optionally *O*-protected R^1-1-carbonyl-2-(R^2)-carbamoyl-methylene(R^3)-R^4-carboxylic acid and hydroxysuccinamide with an imide comprising dicyclohexylcarbodiimide thereby forming a optionally *O*-protected R^1-1-carbonyl-C2(R^2)-carbamoyl-methylene(R^3)-R^4-carboxylic acid 2,5-dioxo-pyrrolidin-1-yl ester;

j) treating a suspension of R^5 or the chloride thereof, said R^5 optionally *O*-protected, in a solvent comprising dimethylformamide sequentially with triethylamine and with a solution of said *O*-protected R^1-1-carbonyl-C2(R^2)-carbamoyl-methylene(R^3)-R^4-carboxylic acid 2,5-dioxo-pyrrolidin-1-yl ester in a solvent comprising dimethylformamide thereby forming an R^1-1-carbonyl-C2(R^2)-carbamoyl-methylene(R^3)-R^4-carbonyl-R^5, said R^1 and R^5 independently optionally O-protected; and

k) hydrogenating said R^1 and R^5, said R^1 and R^5 independently comprising an O-protecting group, with hydrogen gas and a catalyst comprising palladium hydroxide in activated carbon

wherein (S,S,R)-(-)-actinonin or said chemical compound of claim 1 is thereby formed.

6. The method of claim 5, wherein;

R^1 is 2-hydroxymethyl-pyrrolidine, 2-methylpyrrolidine, 2-methylamine-pyrrolidine, methyl-2-pyrrolidine carboxylate, or 2-hydroxycarbamoyl ;

R^2 is methyl, benzyl, 4-hydroxybenzyl, methylethyl, 2-methyl propyl, 3-methyl-indolyl;

R^3 is methyl or pentyl;

R^4 is methylene; and

R^5 is NH_2, OH, NHOH, $NHOCH_3$, $N(CH_3)OH$, $N(CH_3)OCH_3$, $NHCH_2CH_3$, $NH(CH_2CH_3)$, $NHCH_2(2,4\text{-}(OCH3)_2Ph$, $NHCH_2(4\text{-}NO_2)Ph$, $NHN(CH_3)_2$, proline, 2-hydroxymethyl pyrrolidine. piperidine or 1-methyl-piperazine.

7. The method of claim 6, wherein when:

R^1 is 2-hydroxymethyl-pyrrolidine;

R^2 is benzyl;

R^3 is pentyl;

R^4 is methylene; and

R^5 is $NHOCH_3$, $N(CH_3)OCH_3$, $NHCH_2CH_3$, $NH(CH_2CH_3)_2$, $NHCH_2$(2,4-$(OCH3)_2$Ph, $NHCH_2$(4-NO_2)Ph, $NHN(CH_3)_2$, piperidine, or 1-methyl-piperazine;

said chemical compositions are optionally synthesized from said C2(R^3)-R^4-dicarboxylic acid *tert*-butyl ester-(2,5-dioxo-pyrrolidin-1-yl) ester comprising 2-pentylsuccinic acid 4-*tert*-butyl ester 4-(2,5-dioxo-pyrrolidin-1-yl) ester by a method comprising the steps of:

a) treating a solution of L-phenylalanine in a solvent comprising dimethylformamide sequentially with triethylamine and with the 2-pentylsuccinic acid 4-*tert*-butyl ester 4-(2,5-dioxo-pyrrolidin-1-yl) ester thereby forming an 3-(1-Carboxy-2-phenyl-ethylcarbamoyl)-octanoic acid tert-butyl ester;

b) coupling 2-hydroxymethyl pyrrolidine to 3-(1-Carboxy-2-phenyl-ethylcarbamoyl)-octanoic acid tert-butyl ester in a solvent comprising methylene chloride and in the presence of EDC and HOBT thereby forming 3-[1-(2-hydroxymethyl-pyrrolidin-1-yl)-2-benzylcarbamoyl]-octanoic acid 4-*tert*-butyl ester;

c) treating a solution of said 3-[1-(2-hydroxymethyl-pyrrolidin-1-yl)-2-benzylcarbamoyl]-octanoic acid 4-*tert*-butyl ester in a solvent comprising methylene chloride with trifluoroacetic acid thereby forming 3-[1-(2-hydroxymethyl-pyrrolidin-1-yl)-2-benzylcarbamoyl]-octanoic acid; and

d) treating a suspension of R^5 in a solvent comprising methylene chloride and in the presence of EDC and HOBT with a solution of 3-[1-(2-hydroxymethyl-pyrrolidin-1-yl)-2-benzylcarbamoyl]-octanoic acid in methylene chloride to form N4(R^5)-N1-[1-benzyl-2(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl]-2-pentyl-succinamide.

8. The method of claim 5, wherein R^1 is 2-methyl pyrrolidine, 2-hydroxymethyl pyrrolidine or 2- hydroxycarbamoyl pyrrolidine; and

R^2 is methyl, CH_2CH_3, $(CH_2)_2CH_3$, $C(CH_3)_3$;

R^3 is R^2 or C_{4-7}alkyleneCH_3,

R^4 is methylene; and

R^5 is hydroxyamine;

said method comprising the steps of:

a) coupling an *O*-protected methoxypyrrolidine or a derivative thereof with an *N*-protected amino acid 2,5-dioxo-pyrrolidinyl ester thereby forming an *N*,*O*-protected methylpyrrolidine-1-carbonyl-2-methylamine or a derivative thereof;

b) deprotecting the *N*-protecting group with a deprotecting agent comprising trifluoracetic acid thereby forming a pyrrolidine-1-carbonyl-2-methylamine or a derivative thereof;

c) treating a solution of 4-(*S*)-isopropyl-oxazolidin-2-one with a solution of a base comprising n-butyl lithium in hexanes and adding an alkynoyl chloride thereby forming an alkynoyloxazolidinone;

d) treating a solution of the alkynoyloxazolidinone sequentially with a base comprising lithium diisopropylamide and with bromoacetic acid *tert*-butyl ester thereby forming an oxazolidine-carbonyl-alkynoic acid *tert*-butyl ester;

e) treating a mixture of the oxazolidine-carbonyl-alkynoic acid *tert*-butyl ester in tetrahydrofuran and water sequentially with hydrogen peroxide in water and with lithium

hydroxide in water thereby forming an alkylsuccinic acid 4-*tert*-butyl ester;

f) treating a mixture of the alkylsuccinic acid 4-*tert*-butyl ester and hydroxysuccinimide in a solvent comprising dioxane or dimethylformamide with an imide comprising dicyclohexylcarbodiimide thereby forming an alkylsuccinic acid 4-*tert*-butyl ester 4-(2,5-dioxo-pyrrolidin-1-yl) ester.

g) treating a solution of the pyrrolidine-1-carbonyl-2-methylamine or the derivative thereof in a solvent comprising tetrahydrofuran sequentially with triethylamine and with the alkylsuccinic acid 4-*tert*-butyl ester 4-(2,5-dioxo-pyrrolidin-1-yl) ester thereby forming a pyrrolidine-1-carbonyl-2-methylalkyl-carbamoyl-alkynoic acid *tert*-butyl ester or a derivative thereof;

h) treating a solution of the pyrrolidine-1-carbonyl-2-methylalkyl-carbamoyl-alkynoic acid *tert*-butyl ester or the derivative thereof in a solvent comprising methylene with trifluoroacetic acid thereby forming a pyrrolidine-1-carbonyl-2-methyl-alkylcarbamoyl-alkynoic acid or a derivative thereof;

i) treating the pyrrolidine-1-carbonyl-2-methyl-alkylcarbamoyl-alkynoic acid or the derivative thereof and

hydroxysucinamide with an imide comprising dicyclohexylcarbodiimide thereby forming a pyrrolidine-1-carbonyl-2-methyl-alkylcarbamoyl-alkynoic acid or a derivative thereof;

j) treating a suspension of *O*-benzylhydroxyamine hydrochloride in a solvent comprising dimethylformamide sequentially with triethylamine and with a solution of the pyrrolidine-1-carbonyl-2-methylalkylcarbamoyl-alkynoic acid 2,5-dioxo-pyrrolidin-1-yl ester or the derivative thereof in a solvent comprising dimethylformamide thereby forming *N*4-benzyloxy-*N*1-(1-(pyrrolidine-1-carbonyl)-2-methylalkyl)-2-alkyl-succinamide or a derivative thereof; and

k) hydrogenating *N*4-benzyloxy-*N*1-(1-(pyrrolidine-1-carbonyl)-2-methylalkyl)-2-alkyl-succinamide or the derivative thereof with hydrogen gas and a catalyst comprising palladium hydroxide in activated carbon.

9. The method of claim 8, wherein said chemical compound is (S,S,R)-(-)-actinonin, wherein R^1 is 2-hydroxymethyl

pyrrolidine; R^2 is methylethyl; R^3 is pentyl; R^4 is methylene; and R^5 is hydroxyamine; said method comprising the steps of:

a) treating a solution of 4-(*S*)-isopropyl-oxazolidin-2-one in tetrahydrofuran at -78 °C with a solution of n-butyl lithium in hexanes;

b) adding heptanoyl chloride 3 thereby forming 3-heptanoyl-4-(*S*)-isopropyl-oxazolidin-2-one;

c) treating a solution of 3-heptanoyl-4-(*S*)-isopropyl-oxazolidin-2-one in tetrahydrofuran sequentially with lithium diisopropylamide and bromoacetic acid *tert*-butyl ester thereby forming 3-(4-(*S*)-isopropyl-2-oxo-oxazolidine-3-(*S*)-carbonyl) octanoic acid *tert*-butyl ester;

d) treating a mixture of 3-(4-(*S*)-isopropyl-2-oxo-oxazolidine-3-(*S*)-carbonyl)octanoic acid *tert*-butyl ester in THF and water sequentially with hydrogen peroxide in water and lithium hydroxide in water at 0 °C thereby forming 2-(*R*)-pentylsuccinic acid 4-*tert*-butyl ester;

e) mixing 2-(*R*)-pentylsuccinic acid 4-*tert*-butyl ester and hydroxysuccinimide in dimethylformamide or dioxane and treating the mixture with dicyclohexylcarbodiimide thereby forming

2-(*R*)-pentyl succinic acid 4-*tert*-butyl ester 4-(2,5-dioxo-pyrrolidin-1-yl) ester;

f) treating a solution of 2-(*S*)-benzyloxymethylpyrrolidine in tetrahydrofuran sequentially with triethylamine and a solution of 2-*tert*-butoxy carbonylamino-3-methylbutyric acid 2,5-dioxo-pyrrolidin-1-yl in tetrahydrofuran thereby forming (1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methyl -propyl)-carbamic acid *tert*-butyl ester;

g) dissolving (1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-carbamic acid *tert*-butyl ester in methylene and treating the solution with trifluoroacetic acid thereby forming 2-amino-1-(2-benzyloxymethylpyrrolidin-1-yl)-3-methyl butan-1-one;

h) treating 2-amino-1-(2-benzyloxymethylpyrrolidin-1-yl)-3-methylbutan-1-one in dimethylformamide sequentially with triethylamine and a solution of 2-(*R*)-pentylsuccinic acid 4-*tert*-butyl ester 4-(2,5-dioxo-pyrrolidin-1-yl) ester in dimethylformamide thereby forming 3-(1-(2-(*S*)-benzyloxymethylpyrrolidine-1-carbonyl)-2-(*S*)-methyl propyl-carbamoyl)-octanoic acid *tert*-butyl ester;

i) treating 3-(1-(2-(*S*)-benzyloxymethylpyrrolidine-1-carbonyl)-2-(*S*)-methyl propyl-carbamoyl)-octanoic acid *tert*-butyl ester in dichloromethane with trifluoroacetic acid thereby forming 3-(1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propyl carbamoyl)-octanoic acid;

j) treating a solution of 3-(1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propylcarbamoyl)-octanoic acid and hydroxysuccinamide with dicyclohexylcarbodiimide thereby forming 3-(1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methylpropyl carbamoyl)-octanoic acid 2,5-dioxo-pyrrolidin-1-yl ester;

k) treating a suspension of *O*-benzylhydroxyamine hydrochloride in dimethylformamide sequentially with triethylamine and a solution of 3-(1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methylpropylcarbamoyl)-octanoic acid 2,5-dioxo-pyrrolidin-1-yl ester in dimethylformamide thereby forming *N*4-benzyloxy-*N*1-(1-(2-benzyloxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide; and

l) hydrogenating *N*4-benzyloxy-*N*1-(1-(2-benzyloxy methyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-

succinamide with hydrogen gas and palladium hydroxide in activated carbon wherein (S,S;R)-(-)-actinonin is thereby formed.

10. A method for the treatment of a neoplastic disease comprising the step of administering to an individual in need of such treatment a pharmacologically effective dose of the chemical compound of claim 1.

11. The method of claim 10, wherein said chemical compound is *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-3-methyl-butyl)-2-pentyl-succinamide, *N*1-(1-(2-methyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide, *N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl)-*N*4-hydroxy-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-methyl-succinamide, *N*4-hydroxy-*N*1-(1-benzyl-2-(2-methyl-pyrrolidin-1-yl)-2-oxo-ethyl -2-pentyl-succinamide, or *N*4-hydroxy-*N*1-(1-(methyl-2-

carboxy-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide.

12. The method of claim 10, wherein said individual is a human or an animal.

13. The method of claim 10, wherein said neoplastic disease is selected form the group consisting of human ovarian carcinoma, prostate carcinoma, mammary carcinoma, head and neck squamous cell carcinoma, non-small-cell-lung-cancer adenocarcinoma, non-small-cell-lung-cancer squamous cells, and acute myologenous leukemia.

14. A method of inhibiting the growth of a tumor cell comprising the step of contacting said cell with a pharmacologically effective dose of the chemical composition of claim 1.

15. The method of claim 14, wherein said chemical compound is *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-3-methyl-butyl)-2-pentyl-succinamide, *N*1-(1-(2-methyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide, *N*1-(1-benzyl-2-(2-hydroxymethyl-pyrrolidin-1-yl)-2-oxo-ethyl)-*N*4-hydroxy-2-pentyl-succinamide, *N*4-hydroxy-*N*1-(1-(2-hydroxymethyl-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-methyl-succinamide, *N*4-hydroxy-*N*1-(1-benzyl-2-(2-methyl-pyrrolidin-1-yl)-2-oxo-ethyl -2-pentyl-succinamide, or *N*4-hydroxy-*N*1-(1-(methyl-2-carboxy-pyrrolidine-1-carbonyl)-2-methyl-propyl)-2-pentyl-succinamide.

16. The method of claim 14, wherein said tumor cell is selected from the group consisting of human ovarian cancer cells, prostate cancer cells, mammary cancer cells, head and neck squamous cancer cells, non-small-cell-lung-cancer cells, adenocarcinoma cells, non-small-cell-lung-cancer squamous cells, and acute myologenous leukemic cells.

17. A method for the treatment of a neoplastic disease comprising the step of administering to an individual in need of such treatment a pharmacologically effective dose of (S,S,R)-(-)-actinonin.

18. The method of claim 17, wherein said individual is a human or an animal.

19. The method of claim 17, wherein said neoplastic disease is selected form the group consisting of human ovarian carcinoma, prostate carcinoma, mammary carcinoma, head and neck squamous cell carcinoma, non-small-cell-lung-cancer adenocarcinoma, non-small-cell-lung-cancer squamous cells, and acute myologenous leukemia.

20. A method of inhibiting the growth of a tumor cell comprising the step of contacting said cell with a pharmacologically effective dose of (S,S,R)-(-)-actinonin.

21. The method of claim 20, wherein said tumor cell is selected from the group consisting of human ovarian cancer cells, prostate cancer cells, mammary cancer cells, head and neck squamous cancer cells, non-small-cell-lung-cancer cells, adenocarcinoma cells, non-small-cell-lung-cancer squamous cells, and acute myologenous leukemic cells.